

million of the pick and choice of British industrial interests, such as we have the honour to serve and represent, would, upon the exhibition of their rallying standard, shew signs of power, wealth, and influence in a way to astonish, although before so little thought of, and hardly dreamed about.

But five hundred thousand builders, scattered and disorganized, as we may so speak, living in half ignorance each man of the other's existence, exhibiting to the world, in this day of class representation and class union, the almost astounding paradox of having no organ of public expression, while the "press" has groaned under the duties of representing little actions of a hundred inferior interests; five hundred thousand builders, we say, are not for the first time enrolled, and their census taken, without great labour, the encountering of great difficulties, and what may seem to some a tedious process, and symptomatic of delay. **THE BUILDER** and the **BUILDERS' AGENCY** are twin brothers, so to speak, of coeval existences and coincident progress; many minor or apparently secondary off-shoots will grow out of them, but these proceed in parallel lines, and accumulate in equal ratios. What we have wished, and still desire to accomplish, is as much as possible to preserve a character of liberal and generous devotion to the interests of our class in all our workings. So we have sent the paper forth, relying upon, and we are happy to say experiencing, a large share of popular support. In this agency business, promising to be, as we have said, co-extensive in importance and usefulness with **THE BUILDER** itself, we are anxious to conduct ourselves on a footing to square with the rest of our doings, and should be best satisfied to see a suitable gentleman from the Builders' ranks, entitled to their confidence, placed at the head of it. Builders, and Builders only, ought to reap the principal advantage in what so distinctly pertains to them as does this business, and we offer, nay, invite them to seize these advantages. Hitherto we have borne the brunt of great and trying responsibilities in this vast experiment. Although we are convinced that thousands would have relieved us had it been known to them what difficulties we have had to encounter; but now much of the ground is cleared, and the prospect of success developed. We will say no more. The Builders' Agency, in connection with **THE BUILDER** itself, is open to the man of right qualifications, and one qualification is the sense to perceive its extensive ramifications in all matters pertaining to Builders' wants and requirements, not only in this country, but all over the world.

The Earl of Pembroke has given instructions for a mansion to be erected for his lordship at the lower end of Grosvenor-place. It will command a splendid view of the Buckingham Gardens.

On Saturday afternoon, the foundation-stone of the new church in the parish of All Saints, Southampton, was laid by Sir Launcelot Shadwell, Vice-Chancellor of England, and father of the late lamented rector. A beautiful lithographic representation of the church, as it will appear when completed, has been executed, which indicates that the intended structure will add to the well-deserved reputation of Mr. Owen Carter, of Winchester, who has been appointed architect. The building is to be in the Norman style, with a tower and spire of peculiar but extremely characteristic and picturesque appearance. The material is to be of stone, and the roof covered with tiles, the construction substantial, and the proposed cost, including the tower, will be under 3,000*l*. The proposed accommodation is for upwards of 500 persons, of which nearly 260 will be free sittings, and the contract for the building has been taken by Mr. W. Williams, formerly of St. Cross, near Winchester.

PATENT ELASTIC CAOUTCHOUC, OR INDIA-RUBBER PAVEMENT.

This pavement is termed by the inventors and proprietors patent elastic pavement, but we have appended to it a name of our own, because we like such designations as make a matter familiar to every one we address; we have therefore called it the India-rubber pavement; the term caoutchouc is less popular, and less understood than India-rubber. We remember the time of the introduction of various fabrics, in which caoutchouc formed the staple, such as the macintosh cloaks, goloshes, web, &c., and we invariably found it preferred to attach the popular rather than the technical term; for this reason, therefore, it is that we adopt it on the present occasion.

If we had been writing about or considering this invention for the first time, if, for instance, it had been announced to us only to-day that such a discovery or such an application of India-rubber was proposed as for floors and pavements, we should have been overflowing with the feeling and expression of surprise, exclaiming perhaps, "What will come next?" Gums and vegetable extracts for floors and pavements! What in the name of novelty is it we are tending to? If asphalt and artificial stones, pitch and resin, and concretions of lime, glues and composites had not in an almost endless variation of shapes been presented to us for this and similar uses, and if this **INDIA-RUBBER PAVEMENT** itself had not been under our observation for some time, quietly watching as we were the experiments of its promoters and projectors, we should most assuredly have been at this present writing under the influence of surprise, astonishment, and probably incredulity; but prepared as we say we have been by long contemplation of ancillary workings, we are enabled to speak now in the sober language of ordinary lookers-on, and what we are most interested in or excited by, is, that this extraordinary, though familiar, substance and process should have its full, fair, and early trial and judgment.

And the builders are the men to give it this, and this paper, the vehicle of information to builders, is the most fitting to put itself forward to ask for this trial. It may be all very well for the common curiosity to be excited through the common channels, and that the experiments of a thousand novices in the building art should be set on foot, and there are many who incline to the opinion that we builders are pushed forward, and, in fact, that all regular professions or crafts are as much benefited by experiments and practitioners without the pale of our craft as by those made in it, but, after all, we contend for it that the approving fiat of the builders is necessary to stamp a matter of this kind with value and authenticity. We therefore call upon the builders to apply their minds to the consideration and trial of this India-rubber pavement and flooring; there are thousands of instances where the experiment, if successful, would be signally beneficial, and where, if it were not so, it would be of little consequence; a few instances we will proceed to mention.

But first, by the way, it behoves us to speak of the various different forms and uses under which this material is presented to us. We find it solid and compact in some instances as a wooden block, in others pliable as we might expect from its nature; in the one case compressed by great hydraulic force, in the other laid out, tenacious and cohesive like a sheet; in one instance combined with sand, rendering it insoluble in wet, a most important quality, in another instance combined with sawdust, deriving its colour from the different qualities of the sawdust used, if from mahogany one colour, if from oak another. In one case we find it an inch thick for stout pavement, in another still thinner, for the floors of ordinary apartments; again, a mere sheet, or of oil-cloth texture, for laying over damp floors, sheathing, or casing damp walls and the like.

It is spoken of as being likely to be very valuable for barn floors, resisting damp and decay, and from its elastic quality (like wood) avoiding the bruising or cracking of the grain in thrashing. In stable floors it is already used, as at Sir Francis Collier's, at Woolwich, Mr. Rolfe's, Hyde Park Gardens, &c., and the highest commendations of it are given. Unlike the ordinary pavement, there is no chance of the absorption, either in joints or otherwise,

of the dung or urine, by which that painful and injurious exhalation of ammoniacal vapour, so harmful to the eyes and health of horses, is avoided; and in the use of straw we hear it is remarkably economical.

The patentees, who have an office at 42, Lombard-street, have of course published an account of the particular uses and advantages of their material, and our readers who are desirous of making themselves intimately acquainted with it, will do well to apply for the tract and specimens; the former enters into the question more fully than we can pretend to do, speaks of the rate of cost, the nature and composition, the uses and trials it has been put to, and those for which it is designed, such as matting, roofing, sheathing, railway packing in lieu of felt for the chairs and rails, for foundations and floors, and lastly for ship and boat building, by way of protection from splinters, &c.

Drawings are also given with the tract, and a description for laying stable floors, which will be found more than merely useful in reference to this material, and a table of the comparative weights of different roofing materials, so that there is ample promise of gain and information, if only by looking into the matter as we have done.

WATER-PRESSURE ENGINE AT FREYBERG.

BY W. L. BAKER, GRAD. INST. C. E.

The machine, described in this communication, was designed by Herr Brendel, in 1823, and constructed in 1821, for draining the Alte Mordgrube Mine, one of the largest silver mines in the neighbourhood of Freyberg, in Saxony. This engine, which is fixed at a depth of 360 feet below the surface of the ground, has two single-acting cast-iron cylinders, each 18 inches in diameter and 9 feet stroke; to the pistons of which are fixed strong timber piston-rods, each attached at their upper ends by a flat-iron rod and chain, to the opposite segments of a horizontal working beam, thus connecting the pistons of the two cylinders, so that, when one is being moved upwards by the pressure of water underneath it, the other is depressed by the weight of all the pump-rods and other moving parts to which it is connected. The admission and eduction of water from the cylinders is regulated by slide valves, worked by levers and tappets. The piston-rods give motion to the horizontal arms of two bell-crank levers, the diagonal arms of which move the main pump-rods, working forty-four pumps, in two sets of twenty-two each, placed one above another, at an angle of 45° with the horizon, each dipping into the delivery cistern of the pump immediately below it; this is repeated downwards for the whole series, and thus the water is raised from the bottom of the mine to the point where it runs off by an adit. Each pump has a lift of 30 feet 4 inches. The duty performed by this engine is stated by Gerstner (*Handbuch der Mechanik*, published at Vienna in 1834) to be as 70 to 100. The author then gives a very minute account of the construction of the engine, illustrating the paper by three drawings, giving the general arrangement and the detailed dimensions of all the working parts.

Mr. Taylor remarked, that the water-pressure engine was of Hungarian origin; it was extensively used in Germany, and had latterly been much improved in construction, particularly by abandoning the rude mode of placing a series of pumps over each other, as had been described in the paper. He believed that Smeston erected the first engine of the kind in this country. Trevithick built one about forty years since, with cylinders of 30 inches diameter. Another was erected by Mr. Fairbairn, and, since then, one had been built under the direction of Mr. Darlington, with cylinders of 50 inches diameter and 10 feet stroke, worked by a force of water of twenty-two fathoms, through a descending column of 30 inches diameter, the pumps worked by the engine were 42 inches in diameter, raising water from a depth of twenty-two fathoms; the usual speed of working was four strokes per minute, but he had seen it attain six strokes. The concussion produced by the closing of the valve at the end of the stroke was generally very prejudicial to these engines, but in that made by Mr. Darlington, it was diminished by allowing the large valve to close a short time before the stroke finished, and bringing the piston home with a small valve; by this means no noise was heard beyond that of the rush of the water, and the violent shocks were avoided.—*Trans. Inst. of Civil Engineers.*